

**ABSTRACT OF THE DISCLOSURE**

A method of forming a silicon nitride layer. The method comprises providing a substrate having a silicon surface thereon, performing an ion implant process on the silicon surface, implanting nitrogen atoms into the silicon surface, and performing a thermal nitridation process and forming a silicon nitride layer on the substrate, wherein the silicon nitride layer comprises the silicon nitride formed on the silicon surface by reaction of the silicon surface with the nitrogen atoms contained therein.